

Abstract

A composite material comprising a layer containing copper, and an electrodeposited CoWP film on the copper layer. The CoWP film contains from 11 atom percent to 25 atom percent phosphorus and has a thickness from 5 nm to 200 nm. The invention is also directed to a method of making an interconnect structure comprising: providing a trench or via within a dielectric material, and a conducting metal containing copper within the trench or the via; and forming a CoWP film by electrodeposition on the copper layer. The CoWP film contains from 10 atom percent to 25 atom percent phosphorus and has a thickness from 5 nm to 200 nm. The invention is also directed to a interconnect structure comprising a dielectric layer in contact with a metal layer; an electrodeposited CoWP film on the metal layer, and a copper layer on the CoWP film.